

**JSA Number:** JSA-10

**Task:** Excavation and Subsurface Sampling

<b>JSA NUMBER:</b> Yerington – 10 <b>DATE:</b> 10/15/04 <b>NEW</b> X <b>REVISION</b>	<b>Company Performing the Job:</b> Brown and Caldwell	<b>SUPERVISOR:</b> Penny Bassett, Brian Bass  <b>SAFETY OFFICER:</b> Brian Bass
<b>JOB TITLE OR TASK:</b>  Excavation and Subsurface Sampling	<b>TITLE OF PERSON(S) WHO PERFORMS JOB:</b> Site Managers: Penny Bassett, Brian Bass Site Technicians or Engineers: Raymond Lauster, Tina Cox, Raquel Kutsch	<b>ANALYSIS BY:</b> Penny Bassett, Brian Bass <b>REVIEWED BY:</b> <b>APPROVED BY:</b>
<b>RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT (PPE) AND/OR PERTINENT JOB SAFETY FORMS:</b> Hard hat, safety goggles or glasses, steel-toed boots. As appropriate: rubber gloves, face shield, rubber boots or hip waders, half-mask respirator.		
SEQUENCE OF BASIC JOB STEPS	POTENTIAL HAZARDS	PREVENTIVE OR CORRECTIVE ACTION
1. Pre-Construction Safety Meeting.		1. All employees assigned to this task will attend a pre-construction safety meeting, which will include the pertinent JSAs, Standard Operating Procedures, types of potential hazards, and actual hazards present and controls for those hazards.
2. Location and setup of backhoe	1. Visitor mishaps and resulting bodily injury.  2. Digging into underground utilities  3. Striking overhead lines or objects with bucket.	1. Pay attention to visitors approaching work area. If necessary, setup barriers to keep vehicles and visitors out of the work area and use caution tape if available. 2. Underground utilities, where possible, should be marked out before digging begins. Use facility maps/as-builts and local utilities (where practicable) to identify lines. 3. Observe overhead lines, tree limbs, or other objects before setting up and raising the bucket of the backhoe. Anticipate the radius of sweep going up and coming down, and plan appropriately.
3. Excavation	1. Injury to hearing from noise.  2. Inhalation hazards from dust from drilling or excavation activities. 3. Exposure to radiation hazards  4. Physical injury from moving parts of machinery.  5. Physical hazards to personnel on the ground in the vicinity of the heavy machinery.	1. Wear approved safety ear plugs when working close enough to backhoe that you have to speak louder than your normal voice to someone standing next to you. 2. Wear appropriate PPE to protect from dust. This is usually a half-face air-purifying respirator with dust cartridges. 3. Some areas where excavation occurs may have low-level (alpha) and/or high-level (gamma) radiation hazards. Monitor each sample location for radiation before setting up. Areas with alpha radiation >200 CPM or gamma >200 uR/hr require use of respirator, >500 CPM or gamma >500 uR/hr requires respirator, goggles, tyvek suit and rubber boots. 4. Avoid moving parts of machinery. Keep fingers, hands, and arms away from backhoe bucket and other pinch points. Wear leather gloves when using hands for activities other than sampling, and steel-toed boots. Wear hard hat at all times. 5. Personnel on the ground should keep away from the work area and backhoe unless they are required for the task. Ask for assistance when carrying or moving heavy loads. Use legs to lift...not the back. Do not approach heavy equipment without

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	<p>6. Inhalation of dirt or dust during work activities.</p> <p>7. Inhalation or dermal contact of dirt or dust after work activities</p>	<p>first establishing eye contact with the operator. Use standard hand signals when noise levels inhibit auditory communication. Ensure that all heavy machinery have audible back-up signals. NEVER work alone when operating heavy machinery.</p> <p>6. To avoid inhalation of dust, wear a fit-tested half-face respirator with appropriate cartridges for particles and other potential contaminants, including radionuclides. The respirator must be worn whenever field instruments indicate the need, or whenever wind-blown dust is obvious, in combination with detected contaminants.</p> <p>7. To avoid inhalation or dermal contact from dirt and dust that can accumulate on clothing, wear coveralls or suits (e.g., tyvek suits) that protect regular work clothes, boots, and hair from exposure to dust and dirt. Remove work clothes, including boots, before entering environments outside of the work site such as your home.</p>
4. Prepare sample bottles and dress in appropriate PPE.	1. Burn or corrosion from acid spillage, if sample bottles do not have acid already in them.	1. Wear protective gloves and safety glasses or goggles when transferring acid from storage container to sample containers. Ensure that gloves are appropriate for acids.
5. Sample collection.	<p>1. Skin irritation from dermal or eye contact.</p> <p>2. Slipping or falling on concrete structures- sharp rock and protruding objects.</p> <p>3. Encountering and breaking buried pipelines with unidentified solutions. Possible exposure to corrosive or toxic solutions or gases</p> <p>4. Falling into excavation</p>	<p>1. Wear rubber or latex gloves to prevent contact with hands and arms. Wear safety glasses or goggles to prevent eye contact from splashes.</p> <p>2. Wear boots with treaded soles to reduce potential for slipping on wet concrete or wet ground. Avoid walking on liners or plastic that are wet or icy.</p> <p>3. Avoid contact with solutions. Wear Tyvek coveralls, acid resistant gloves, goggles, and respirator with acid gas cartridge.</p> <p>4. Never lean over or stand near the edge of an excavation to collect samples or observe activities. Never enter the excavation if it is deeper than waist height. Use the backhoe bucket to collect samples.</p>
7. All Activities	1. Back, hand, or foot injuries during manual handling of materials.	<p>1. Workers should inspect materials for slivers, jagged or sharp edges, and rough or slippery surfaces.</p> <p>2. Workers should wipe off greasy, wet, slippery, or dirty objects before attempting to handle them.</p> <p>4. In most cases, gloves or other protection should be used to prevent hand injuries.</p> <p>5. Steel-toed boots should be used for protection of the feet when not in the water.</p> <p>6. Routes should be surveyed for obstacles prior to moving materials from one location to another.</p> <p>7. All three main factors in manual lifting (load location, task repetition, and load weight) must be considered when evaluating what is safe or unsafe to lift.</p> <p>7. All manual handling of heavy or bulky objects should be carefully planned to avoid injuries and damage to equipment.</p>

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8. All Activities	1. Heat exhaustion or stroke.	<ol style="list-style-type: none"><li>1. Avoid strenuous work in ambient temperatures over 80 degrees F.</li><li>2. Wear light-colored clothing, shaded sunglasses, and hat that provides shade and adequate air movement.</li><li>3. Find cool, shady area for breaks or respite from heat.</li><li>4. If worker feels dizzy, has a headache, has cool, moist, or pale skin or is weak, immediately move to a cooler environment, loosen tight clothing, provide air circulation to area, and provide small amounts of cool water to drink.</li><li>5. If worker has a change in level of consciousness, high body temperature, red, hot skin, rapid or weak pulse, or rapid or shallow breathing, call the emergency phone number and give care in accordance with #4 above.</li></ol>
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**JSA Number:** JSA-10

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9. All Activities	1. Hypothermia or frostbite.	<ol style="list-style-type: none"><li>1. Avoid working in extreme cold.</li><li>2. Wear warm, layered clothing with adequate protection for hands and feet.</li><li>3. Find warm area out of the wind for breaks or respite from cold.</li><li>4. If worker experiences shivering, irregular pulse, numbness, glassy stare, impaired judgement, loss of muscle control with no shivering, or loss of consciousness, gently move worker to warm place, check vital signs, remove any wet clothing, cover with blankets and warm slowly.</li><li>5. If worker experiences loss of feeling or sensation in extremities, discolored or waxy skin, blisters or blue skin, remove wet clothing and jewelry, soak frostbitten area in warm water, cover with dry, sterile dressing (do not rub anything on the area), check vital signs.</li></ol>
7. Unsafe conditions.	1. All potential hazards.	<ol style="list-style-type: none"><li>1. Where a situation presents a hazardous condition, the exposed employee will be removed from the hazardous area until all necessary precautions have been taken to eliminate the hazard and ensure their safety.</li></ol>

Personnel Signatures		
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